Pathology, M.S.

The M.S. program in pathology prepares postbaccalaureate science majors for a range of biomedical careers. Graduate-level coursework provides students with a foundation in cellular and molecular biology, as well as specialized knowledge in pathobiology. A laboratory intensive thesis project equips trainees with cutting edge research skills. Students typically complete the program in two and one-half years.

Learning Outcomes

Graduates will be able to:

• demonstrate subject matter expertise in basic cell and molecular biology, biostatistics, and pathobiology/mechanisms of human disease;
• understand and apply scientific method allowing for the appropriate development and testing of hypotheses, problem solving, and utilization of current literature and contemporary laboratory approaches;
• understand and apply the need to conduct research using a team-based approach, including ongoing input from the thesis mentor and committee as well as peers within the laboratory and departmental environment;
• understand and apply the key principles of carrying out research and interpreting results using the highest ethical standards; and
• acquire the ability to effectively communicate research goals, approaches, and results using both written and oral means.

Requirements

The Master of Science program in pathology requires a minimum of 30 s.h. of graduate credit, including 21 s.h. of coursework and 9 s.h. of research leading up to the thesis. Students must maintain a program g.p.a. of at least 2.75.

The M.S. with a major in pathology requires the following coursework.

Required Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of these:</td>
<td></td>
<td></td>
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<tr>
<td>PATH:5270/MMED:5270</td>
<td>Pathogenesis of Major Human Diseases</td>
<td>3</td>
</tr>
<tr>
<td>PATH:6220</td>
<td>Seminar in Pathology (taken two semesters for 1 s.h. each)</td>
<td>2</td>
</tr>
<tr>
<td>BIOS:4120</td>
<td>Introduction to Biostatistics</td>
<td>3</td>
</tr>
<tr>
<td>BMED:5207</td>
<td>Principles of Molecular and Cellular Biology</td>
<td>3</td>
</tr>
<tr>
<td>BMED:7270</td>
<td>Scholarly Integrity/ Responsible Conduct of Research I</td>
<td>0</td>
</tr>
<tr>
<td>BMED:7271</td>
<td>Scholarly Integrity/ Responsible Conduct of Research II</td>
<td>0</td>
</tr>
</tbody>
</table>

Required coursework results in:

• a basic understanding of molecular and cellular biology,
• a basic understanding of biostatistics, and
• an advanced understanding of pathobiology and mechanisms of human disease.

Electives

Remaining graduate-level coursework consists of electives focused on the area or topic related to a student’s thesis project. The elective courses are offered by a range of departments on the biomedical campus.

Thesis

The thesis project is carried out under the guidance of the mentor and thesis committee. The committee is composed of a student's mentor and two additional faculty members. In general, the thesis consists of four chapters with the first being a concise review of the literature; the second, materials and methods; and the last two, a scholarly description of the project results. The thesis must be defended before the committee prior to final approval.

For more information, view the Master of Science in Pathology on the Department of Pathology website.

Admission

Applicants must have a bachelor's degree in a science discipline from a regionally accredited American college or university, or an equivalent degree from another country as determined by the Office of Admissions. Applicants also must have a minimum g.p.a. of 3.00 on a 4.00 scale, or the foreign equivalent as determined by the Office of Admissions. In addition, laboratory-based research experience is highly desired. Graduate Record Examination (GRE) General Test scores are not required to apply.

International students must submit English proficiency test scores that meet institutional requirements. For more information on English proficiency requirements, visit English Proficiency Requirements on the Iowa Graduate Admissions website.

A subset of applicants will be selected for interviews, conducted either in person or by Zoom. Admission decisions are determined based on academic performance, research experience, letters of recommendation, personal statement and interviews.

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Financial Support

All pathology graduate students receive full stipend and tuition support until they complete the program. Stipend amounts are at the same level as other graduate programs on the biomedical campus. The program also pays most of the costs for health and dental insurance.

Career Advancement

The M.S. program in pathology is designed for graduates to advance into research assistant or research scientist positions in academic and private sector laboratories, or to be competitive for advanced degree programs such as the Ph.D., M.B.A., or M.D.